# PATENT ABSTRACTS OF JAPAN

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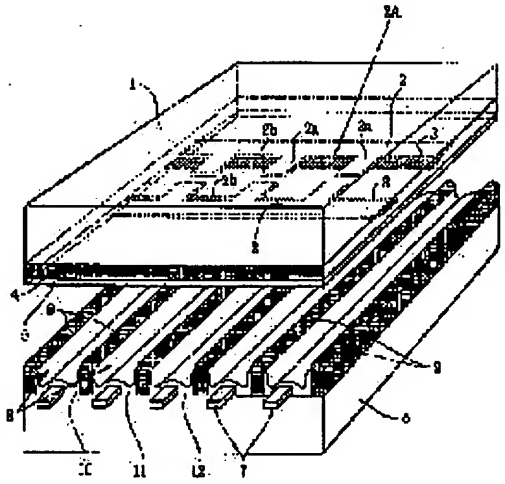
## (54) PLASMA DISPLAY PANEL

(57)Abstract:

PURPOSE: To enhance reliability, and save the consumption of electric power for a large display.

CONSTITUTION: Paired sustained electrodes 2A is formed of transparent conductive films 2 which are provided with projected sections 2a projected while being faced to each other every unit light emitting area, and made of for example, transparent electrode material including tin, and of metallic films (bus electrode) 3 each of which is in a narrow belt shape, and made of aluminum or aluminum alloy. Each resistance independent of every unit light emitting area, is formed in an interface between the metallic film (bus electrode) 3 and the transparent electrode 2 by covering the projected sections 2a of the transparent conductive films 2, and the peak of discharge current between the paired sustained electrodes 2A is thereby reduced as a display is enlarged. By this constitution, not only the consumption of electric power can be saved because of the lowered peak in discharge current between the paired sustained electrodes 2A, but also the voltage drops of the paired sustained electrodes 2A are reduced, a drive margin is thereby made high, and the occurrence of unevenness in brightness can be prevented, so that reliability is thereby enhanced.



LEGAL STATUS

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| [Date of request for examination] | 08.03.2001 |
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CLAIMS

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[Claim(s)]
[Claim 1] It consists of transparence electric conduction film with the lobe which counters mutually and projects for every unit luminescence field, and a band-like metal membrane of a narrow width. And while arranging two or more line electrodes made two [ at a time ] into the pair, making two or more train electrodes counter in the direction which intersects perpendicularly with these line electrode pair and arranging It is the plasma display panel which comes to cover said line electrode pair with a dielectric layer to discharge space.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the plasma display panel aiming at reduction of the line inter-electrode discharge current at the time of starting a plasma display panel, especially attaining big screen-ization etc.
[0002]
[Description of the Prior Art] In recent years, utilization of a plasma display panel (PDP) is expected as a thin large-sized and electrochromatic display.
[0003] Drawing 6 and drawing 7 show an example of the field discharge mold PDP of the alternating current actuation method of 3 pole structures.
[0004] As shown in these drawings, two or more Sas Tin electrode 2A arranged so that two might become a pair at a time is formed in the glass front substrate 1 used as the screen. Sas Tin electrode 2A consists of metal membranes 3 with the narrow width of face formed on the transparence electric conduction film 2 (bus electrode), in order to compensate the conductivity of the transparence electric conduction film 2 and this transparence electric conduction film 2. These Sas Tin electrode 2A is covered with the dielectric layer 4, and the dielectric layer 4 is further covered with the MgO film 5.
[0005] On the other hand, two or more address electrodes 7 which consist of a metal membrane arranged in the direction which intersects perpendicularly with Sas Tin electrode 2A are formed in the tooth-back glass substrate 6. between these address electrodes 7, the septum (rib) 9 for specifying discharge space 8, while keeping constant spacing with the glass front substrate 1 is formed, and the address electrode 7 is covered further -- as -- red (R) -- green -- (G) and the blue (B) fluorescent substance layers 10, 11, and 12 in three primary colors are formed.
[0006] Rare gas is enclosed in discharge space 8. Each crossing of the address electrode 7 and the Sas Tin electrode 2 constitutes the pixel cel (unit luminescence field).
[0007] In the selected pixel cel, if the electrical potential difference more than the breakdown voltage of filler gas is impressed between one side of Sas Tin electrode 2A which makes a pair from the condition which is not emitting light, and the address electrode 7, luminescence will produce the display by PDP of such a configuration by discharge in the front face of the MgO layer 5. This breakdown voltage becomes settled with the property of the spacing length of the glass front substrate 1 and the tooth-back glass substrate 6, the class of filler gas and a pressure, a dielectric layer 4, and the MgO layer 5 etc.
[0008] If discharge is started by impression of breakdown voltage in a pixel cel, since a pixel cel is a capacitive load, the cation and electron which were produced by ionization will turn the inside of discharge space 8 to the electrode of antipole nature, respectively, will move, and will be charged in the wall of the MgO layer 5 of both sides. Since it remains without decreasing since the charge charged in the wall has high resistance of a dielectric layer 4 and the MgO layer 5 and the electric field of reversed polarity are formed with the applied voltage from the outside in discharge space 8 of this wall charge that remained, the electric field in a cel can be weakened and discharge stops promptly. Next, by impressing discharge sustaining voltage among Sas Tin electrode 2A of a couple, discharge is

maintained and maintenance of discharge is continued by wall charge on an electrical potential difference lower than breakdown voltage.
[0009]
[Problem(s) to be Solved by the Invention] However, if PDP mentioned above is big-screen-ized, it will follow on the increment in the pixel cel (unit luminescence field) formed in each crossing of the Sas Tin electrode 2 and the address electrode 7. Since an actuation margin falls since Sas Tin electrode 2A becomes long and the line impedance of Sas Tin electrode 2A increases, or brightness nonuniformity occurs, there is nonconformity of causing lowering of dependability.
[0010] Moreover, since the discharge current between Sas Tin electrode 2A of a couple increases in connection with the need of raising driver voltage with big-screen-izing of PDP, there is also nonconformity that the power consumption of PDP will increase.
[0011] This invention coped with such a situation, was made, and aims at offering the plasma display panel which can attain the improvement and low-power-izing of dependability accompanying big-screen-izing.
[0012]
[Means for Solving the Problem] Invention according to claim 1 consists of transparence electric conduction film with the lobe which counters mutually and projects for every unit luminescence field, and a band-like metal membrane of a narrow width. And while arranging two or more line electrodes made two [ at a time ] into the pair, making two or more train electrodes counter in the direction which intersects perpendicularly with these line electrode pair and arranging It is the plasma display panel which comes to cover said line electrode pair with a dielectric layer to discharge space. It forms so that the lobe of said transparence electric conduction film may be selectively covered by said metal membrane, and it is characterized by making connection between said metal membrane and said transparence electric conduction film become independent for said every unit luminescence field.
[0013] It is characterized by for invention according to claim 2 consisting of a transparent electrode ingredient with which said transparence electric conduction film contains tin, and said metal membrane consisting of aluminum or an aluminum alloy.
[0014]
[Function] The transparence electric conduction film which consists of a transparent electrode ingredient which has the lobe which counters mutually and projects a line electrode pair for every unit luminescence field in the plasma display panel of this invention, for example, contains tin, Band-like [ of a narrow width ] for example, by constituting from a metal membrane which consists of aluminum or an aluminum alloy, and covering the lobe of the transparence electric conduction film selectively by the metal membrane The resistance which made the interface of a metal membrane and the transparence electric conduction film become independent for every unit luminescence field is formed, and the discharge current between line electrode pairs was controlled.
[0015] Therefore, since the voltage drop of about [ that low-power-ization can be attained by controlling the discharge current between line electrode pairs ] and a line electrode pair is reduced, an actuation margin is raised and generating of brightness nonuniformity is prevented, improvement in dependability can be aimed at.
[0016]
[Example] Hereafter, the detail of the example of this invention is explained based on a drawing. In addition, in drawing explained below, the explanation which gives the same sign to the part which is common in drawing 6 and drawing 7 , and overlaps is omitted.
[0017]

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## TECHNICAL FIELD

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[Industrial Application] This invention relates to the plasma display panel aiming at reduction of the line inter-electrode discharge current at the time of starting a plasma display panel, especially attaining big screen-ization etc.

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PRIOR ART

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[Description of the Prior Art] In recent years, utilization of a plasma display panel (PDP) is expected as a thin large-sized and electrochromatic display.
[0003] Drawing 6 and drawing 7 show an example of the field discharge mold PDP of the alternating current actuation method of 3 pole structures.
[0004] As shown in these drawings, two or more Sas Tin electrode 2A arranged so that two might become a pair at a time is formed in the glass front substrate 1 used as the screen. Sas Tin electrode 2A consists of metal membranes 3 with the narrow width of face formed on the transparence electric conduction film 2 (bus electrode), in order to compensate the conductivity of the transparence electric conduction film 2 and this transparence electric conduction film 2. These Sas Tin electrode 2A is covered with the dielectric layer 4, and the dielectric layer 4 is further covered with the MgO film 5.
[0005]

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## EFFECT OF THE INVENTION

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[Effect of the Invention] As explained above, according to the plasma display panel of this invention, by covering the lobe of the transparence electric conduction film selectively by the metal membrane, the resistance which made the interface of a metal membrane and the transparence electric conduction film become independent for every unit luminescence field is formed, and the discharge current between line electrode pairs was controlled.
[0030] Therefore, since the voltage drop of about [ that low-power-ization can be attained by controlling the discharge current between line electrode pairs ] and a line electrode pair is reduced, an actuation margin is raised and generating of brightness nonuniformity is prevented, improvement in dependability can be aimed at.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, if PDP mentioned above is big-screen-ized, it will follow on the increment in the pixel cel (unit luminescence field) formed in each crossing of the Sas Tin electrode 2 and the address electrode 7. Since an actuation margin falls since Sas Tin electrode 2A becomes long and the line impedance of Sas Tin electrode 2A increases, or brightness nonuniformity occurs, there is nonconformity of causing lowering of dependability.
[0010] Moreover, since the discharge current between Sas Tin electrode 2A of a couple increases in connection with the need of raising driver voltage with big-screen-izing of PDP, there is also nonconformity that the power consumption of PDP will increase.
[0011] This invention coped with such a situation, was made, and aims at offering the plasma display panel which can attain the improvement and low-power-izing of dependability accompanying big-screen-izing.

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MEANS

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[Means for Solving the Problem] Invention according to claim 1 consists of transparence electric conduction film with the lobe which counters mutually and projects for every unit luminescence field, and a band-like metal membrane of a narrow width. And while arranging two or more line electrodes made two [ at a time ] into the pair, making two or more train electrodes counter in the direction which intersects perpendicularly with these line electrode pair and arranging It is the plasma display panel which comes to cover said line electrode pair with a dielectric layer to discharge space. It forms so that the lobe of said transparence electric conduction film may be selectively covered by said metal membrane, and it is characterized by making connection between said metal membrane and said transparence electric conduction film become independent for said every unit luminescence field.
[0013] It is characterized by for invention according to claim 2 consisting of a transparent electrode ingredient with which said transparence electric conduction film contains tin, and said metal membrane consisting of aluminum or an aluminum alloy.
[0014]

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## OPERATION

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[Function] In the plasma display panel of this invention, a line electrode pair is mutually countered for every unit luminescence field. By constituting from transparence electric conduction film which consists of a transparent electrode ingredient which has the projecting lobe, for example, contains tin, and a metal membrane which consists of the band-like aluminum or the band-like aluminum alloy of a narrow width, and covering the lobe of the transparence electric conduction film selectively by the metal membrane, the resistance which made the interface of a metal membrane and the transparence electric conduction film become independent for every unit luminescence field is formed, and the discharge current between line electrode pairs was controlled.
[0015] Therefore, since the voltage drop of about [ that low-power-ization can be attained by controlling the discharge current between line electrode pairs ] and a line electrode pair is reduced, an actuation margin is raised and generating of brightness nonuniformity is prevented, improvement in dependability can be aimed at.

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EXAMPLE

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[Example] Hereafter, the detail of the example of this invention is explained based on a drawing. In addition, in drawing explained below, the explanation which gives the same sign to the part which is common in drawing 6 and drawing 7 , and overlaps is omitted.
[0017] Drawing 1 and drawing 2 are what shows one example of the plasma display panel (PDP) of this invention. While lobe 2a which counters mutually the transparence electric conduction film (transparent electrode) 2 of Sas Tin electrode 2A of a couple for every pixel cel, and projects is prepared By being prepared in the condition that a metal membrane (bus electrode) 3 exceeds inner side part 2b of the transparence electric conduction film 2 Lobe 2a of the transparence electric conduction film 2 is covered selectively, and it is different from the conventional PDP in that the interfacial resistance which became independent for every pixel cel between base 2c of lobe 2a and a metal membrane (bus electrode) 3 is formed.
[0018] PDP of such a configuration is manufactured as follows.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]
[Drawing 1] It is the perspective view showing one example of the plasma display panel (PDP) of this invention.
[Drawing 2] It is the top view showing the configuration of the sustain electrode of drawing 1 , and a metal electrode.
[Drawing 3] It is drawing showing reduction of the discharge current peak by the interfacial resistance formed between the sustain electrode of drawing 1 , and a metal electrode as contrasted with the conventional thing.
[Drawing 4] It is the top view showing other examples at the time of changing the configuration of the sustain electrode of drawing 2 , and a metal electrode.
[Drawing 5] It is the top view showing the example of further others at the time of changing the configuration of the sustain electrode of drawing 2 , and a metal electrode.
[Drawing 6] It is the perspective view showing the configuration of the conventional plasma display panel (PDP).
[Drawing 7] It is the top view showing the sustain electrode and metal electrode of drawing 6 .
[Description of Notations]
1 Glass Front Substrate
2 Sas Tin Electrode
2a Lobe
2b Inner side part
2c Base
3 Bus Electrode
4 Dielectric Layer
5 MgO Film
6 Tooth-Back Glass Substrate
7 Address Electrode
8 Discharge Space
9 Septum (Rib)
10, 11, 12 Fluorescent substance layer

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DRAWINGS

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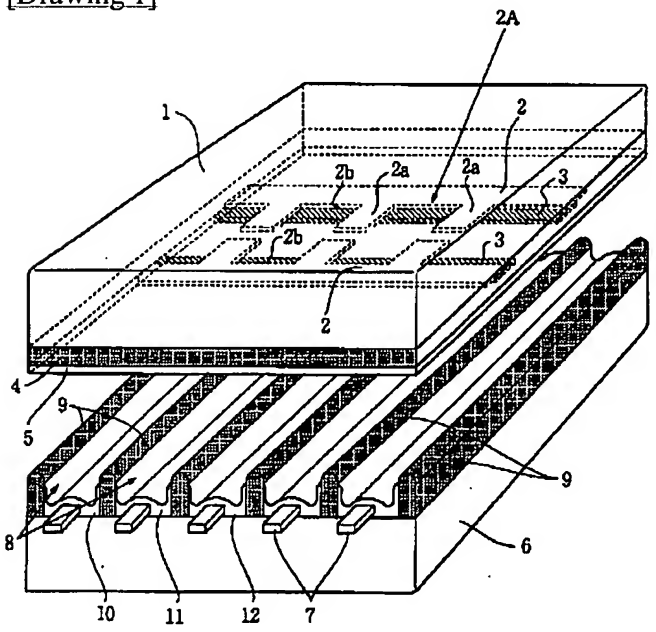
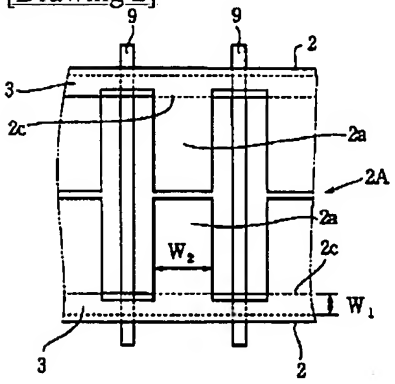
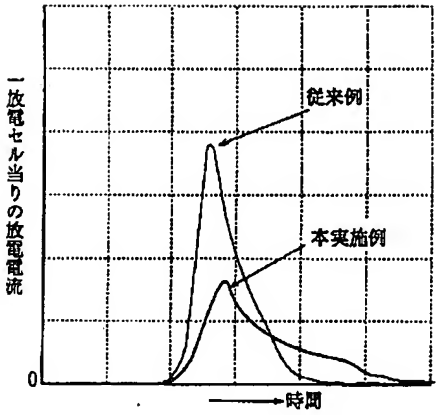
[Drawing 1]




[Drawing 2]




[Drawing 3]

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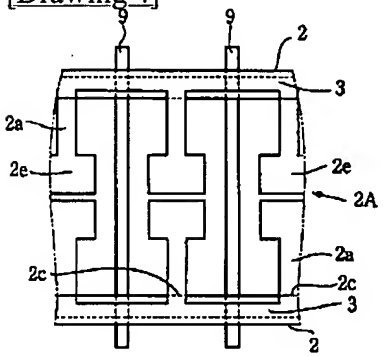


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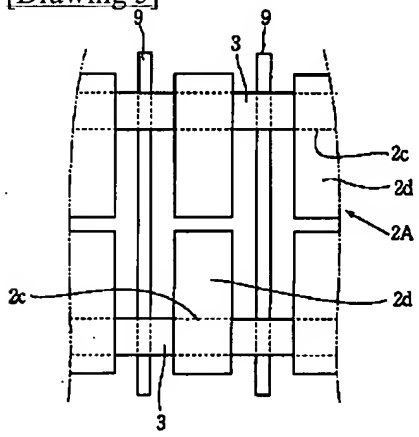
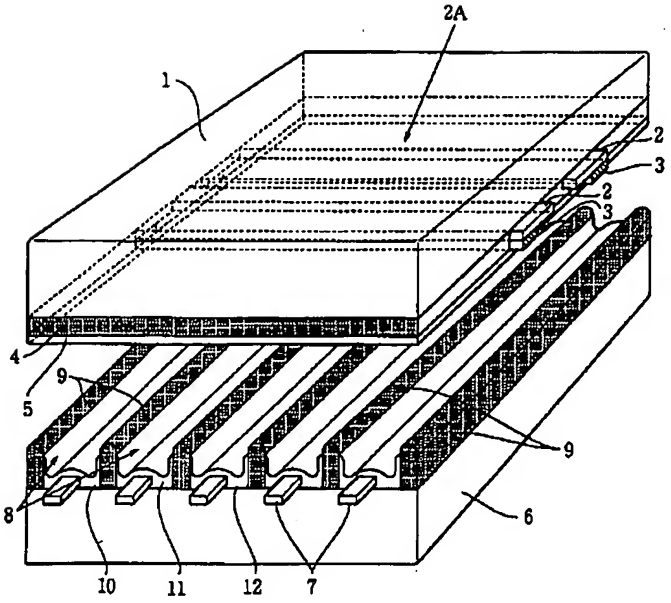
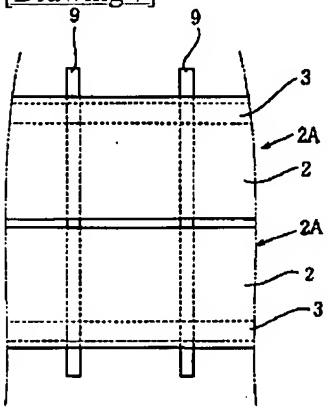



[Drawing 6]




[Drawing 7]

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| Ｈ０１Ｊ　11/02 | | | Ｈ０１Ｊ　11/02 | Ｂ | |
| 11/00 | | | 11/00 | Ｋ | |

審査請求　未請求　請求項の数２　ＯＬ　（全 5 頁）

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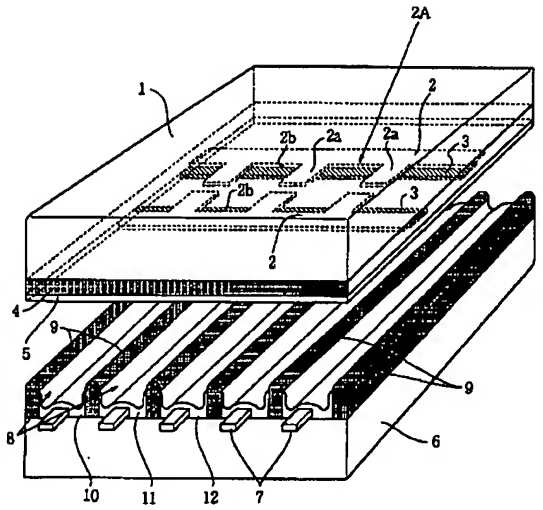
(54)【発明の名称】　プラズマディスプレイパネル

(57)【要約】

【目的】　大画面化に伴った信頼性の向上及び低消費電力化を図ること。

【構成】　一対のサスティン電極２Ａを、単位発光領域毎に互いに対向して突出する突出部２ａを有したとえば錫を含む透明電極材料からなる透明導電膜２と細幅の帯状のたとえばアルミニウム又はアルミニウム合金からなる金属膜（バス電極）３とで構成し、金属膜（バス電極）３によって透明導電膜２の突出部２ａを部分的に覆うことにより、金属膜（バス電極）３と透明導電膜２との界面に単位発光領域毎に独立させた抵抗を形成し、大画面化に伴う一対のサスティン電極２Ａ間での放電電流ピークを低減するようにした。

【効果】　一対のサスティン電極２Ａ間での放電電流ピークの低減によって低消費電力化が図れるばかりか、一対のサスティン電極２Ａの電圧降下が低減されるので、駆動マージンを高めることができ、輝度ムラの発生を防止することができることから、信頼性の向上が図れる。



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【特許請求の範囲】

【請求項１】　単位発光領域毎に互いに対向して突出する突出部を有した透明導電膜と細幅の帯状の金属膜とで構成され、且つ２本ずつ対とされた複数の行電極を配列し、これら行電極対と直交する方向に複数の列電極を対向させて配列するとともに、前記行電極対を放電空間に対して誘電体層により被覆してなるプラズマディスプレイパネルであって、

前記透明導電膜の突出部を前記金属膜によって部分的に覆うように形成し、前記金属膜と前記透明導電膜との接続を前記単位発光領域毎に独立させたことを特徴とするプラズマディスプレイパネル。

【請求項２】　前記透明導電膜は錫を含む透明電極材料からなり、前記金属膜はアルミニウム又はアルミニウム合金からなることを特徴とする請求項１記載のプラズマディスプレイパネル。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、プラズマディスプレイパネルに係り、特に大画面化を図る際の行電極間の放電電流の低減等を図ったプラズマディスプレイパネルに関する。

【０００２】

【従来の技術】近年、大型で且つ薄型のカラー表示装置として、プラズマディスプレイパネル（ＰＤＰ）の実用化が期待されている。

【０００３】図６及び図７は、３極構造の交流駆動方式の面放電型ＰＤＰの一例を示すものである。

【０００４】これらの図に示すように、表示面となる前面ガラス基板１には、２本ずつ対となるように配列された複数のサスティン電極２Ａが形成されている。サスティン電極２Ａは、透明導電膜２とこの透明導電膜２の導電性を補うために透明導電膜２上に形成された幅の狭い金属膜（バス電極）３とで構成されている。これらサスティン電極２Ａは誘電体層４によって被覆されており、更に誘電体層４はＭｇＯ膜５によって被覆されている。

【０００５】一方、背面ガラス基板６には、サスティン電極２Ａと直交する方向に配列された金属膜からなる複数のアドレス電極７が形成されている。これらアドレス電極７間には、前面ガラス基板１との間隔を一定に保つとともに、放電空間８を規定するための隔壁（リブ）９が形成されており、更にアドレス電極７を被覆するように赤（Ｒ），緑（Ｇ），青（Ｂ）の３原色の蛍光体層１０，１１，１２が形成されている。

【０００６】放電空間８内には希ガスが封入されている。アドレス電極７とサスティン電極２との各交差点が画素セル（単位発光領域）を構成している。

【０００７】このような構成のＰＤＰでの表示は、選択された画素セルにおいて、発光していない状態から対をなすサスティン電極２Ａの一方とアドレス電極７との間

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に封入ガスの放電開始電圧以上の電圧を印加すると、ＭｇＯ層５の表面での放電によって発光が生じる。この放電開始電圧は、前面ガラス基板１と背面ガラス基板６との間隔長、封入ガスの種類と圧力、誘電体層４及びＭｇＯ層５の特性等によって定まるものである。

【０００８】放電開始電圧の印加により画素セルにおいて放電が開始されると、電離によって生じた陽イオンや電子は、画素セルが容量性負荷であるため、放電空間８内をそれぞれ反対極性の電極へと向けて移動して両側のＭｇＯ層５の内壁に帯電する。内壁に帯電した電荷は誘電体層４及びＭｇＯ層５の抵抗が高いために減衰せずに残留し、この残留した壁電荷により放電空間８内に外部からの印加電圧とは逆極性の電界が形成されるので、セル内の電界は弱められて放電は直ちに停止する。次に、一対のサスティン電極２Ａ間で放電維持電圧を印加することにより放電は維持され、壁電荷により放電開始電圧より低い電圧にて放電の維持が継続される。

【０００９】

【発明が解決しようとする課題】ところが、上述したＰＤＰを大画面化すると、サスティン電極２とアドレス電極７との各交差点に形成される画素セル（単位発光領域）の増加に伴って、サスティン電極２Ａが長くなり、サスティン電極２Ａのラインインピーダンスが増加してしまうために、駆動マージンが低下したり、輝度ムラが発生してしまったりするため、信頼性の低下を招いてしまうという不具合がある。

【００１０】また、ＰＤＰの大画面化に伴って駆動電圧を高める必要性に伴い、一対のサスティン電極２Ａ間の放電電流が増大してしまうために、ＰＤＰの消費電力が多くなってしまうという不具合もある。

【００１１】本発明は、このような事情に対処してなされたもので、大画面化に伴った信頼性の向上及び低消費電力化を図ることができるプラズマディスプレイパネルを提供することを目的とする。

【００１２】

【課題を解決するための手段】請求項１記載の発明は、単位発光領域毎に互いに対向して突出する突出部を有した透明導電膜と細幅の帯状の金属膜とで構成され、且つ２本ずつ対とされた複数の行電極を配列し、これら行電極対と直交する方向に複数の列電極を対向させて配列するとともに、前記行電極対を放電空間に対して誘電体層により被覆してなるプラズマディスプレイパネルであって、前記透明導電膜の突出部を前記金属膜によって部分的に覆うように形成し、前記金属膜と前記透明導電膜との接続を前記単位発光領域毎に独立させたことを特徴とする。

【００１３】請求項２記載の発明は、前記透明導電膜は錫を含む透明電極材料からなり、前記金属膜はアルミニウム又はアルミニウム合金からなることを特徴とする。

【００１４】

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【作用】本発明のプラズマディスプレイパネルでは、行電極対を、単位発光領域毎に互いに対向して突出する突出部を有し、たとえば錫を含む透明電極材料からなる透明導電膜と、細幅の帯状のたとえばアルミニウム又はアルミニウム合金からなる金属膜とで構成し、金属膜によって透明導電膜の突出部を部分的に覆うことにより、金属膜と透明導電膜との界面に単位発光領域毎に独立させた抵抗を形成し、行電極対間の放電電流を抑制するようにした。

【００１５】したがって、行電極対間の放電電流が抑制されることにより、低消費電力化が図れるばかりか、行電極対の電圧降下が低減されるので、駆動マージンが高められ、輝度ムラの発生が防止されることから、信頼性の向上が図れる。

【００１６】

【実施例】以下、本発明の実施例の詳細を図面に基づいて説明する。なお、以下に説明する図において、図６及び図７と共通する部分には同一符号を付し重複する説明を省略する。

【００１７】図１及び図２は、本発明のプラズマディスプレイパネル（ＰＤＰ）の一実施例を示すものであり、一対のサスティン電極２Ａの透明導電膜（透明電極）２に画素セル毎に互いに対向して突出する突出部２ａが設けられているとともに、金属膜（バス電極）３が透明導電膜２の内側辺部２ｂを越える状態で設けられていることにより、透明導電膜２の突出部２ａが部分的に覆われ、突出部２ａの基部２ｃと金属膜（バス電極）３との間に画素セル毎に独立した界面抵抗が形成されている点で、従来のＰＤＰと相違している。

【００１８】このような構成のＰＤＰは、次のようにして製造される。まず、前面ガラス基板１上に透明導電膜２及び金属膜（バス電極）３によって構成されるサスティン電極２Ａを形成するに際し、前面ガラス基板１上にＩＴＯ又は$S_n O_2$を蒸着又はスパッタリングにより数百オングストロームの膜厚で形成した後、フォトリソグラフィ法でパターンニングし、透明導電膜２を形成する。ここで、透明導電膜２の突出部２ａの幅$W_2$は２００μm程度であり、長さは数百μm程度である。

【００１９】次いで、透明導電膜２上にＡｌ又はＡｌ合金を蒸着又はスパッタリングにより数百オングストロームの膜厚で形成した後、フォトリソグラフィ法でパターンニングし、金属膜（バス電極）３を形成する。ここで、金属膜（バス電極）３の幅幅$W_1$は１００μm程度である。

【００２０】続いて、このようにして形成されたサスティン電極２Ａ上に、たとえば日本電気硝子株式会社製のガラスコードＰＬＳ－３２３２の低融点ガラスを含むガラスペーストを２０～３０μmの厚さに塗布し、５８０℃で１０分間程度焼成して誘電体層４を形成した後、誘電体層４上に蒸着によってＭｇＯ層５を形成する。

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【００２１】このとき、各単位発光領域毎に２０ｋ～４０ｋΩの界面抵抗が透明導電膜２の突出部２ａの基部２ｃと金属膜（バス電極）３との間に形成される。ここでの界面抵抗は、金属膜（バス電極）３の材料及びその厚さや幅、更には透明導電膜２の突出部２ａの幅$W_2$、透明導電膜２の材料や誘電体層４の組成及びその焼成温度等により変えることが可能である。

【００２２】このような構成のＰＤＰは、次のような動作を行う。まず、上述したように、発光していない状態から対をなすサスティン電極２Ａの一方とアドレス電極７との間に封入ガスの放電開始電圧以上の電圧を印加し、ＭｇＯ層５の表面での放電によって発光を生じさせた後、一対のサスティン電極２Ａの突出部２ａ間に放電維持電圧を印加すると、壁電荷により放電開始電圧より低い電圧にて放電の維持が継続される。

【００２３】このとき、透明導電膜２の突出部２ａの基部２ｃと金属膜（バス電極）３との間に形成されている界面抵抗によってサスティン電極２Ａの突出部２ａ間での放電電流が低減されるので、一対のサスティン電極２Ａの電圧降下が抑制され、駆動マージンの高い状態で維持放電が行われることから、それぞれの画素セルが輝度ムラのない適切な状態で駆動される。

【００２４】図３は、サスティン電極２Ａの透明導電膜２の突出部２ａの基部２ｃと金属膜（バス電極）３との間に形成された界面抵抗による作用を、従来のものと対比して示すものであり、同図から解る通り、単位画素セル当りの放電電流のピークが従来のものと比べて、約半分強だけ低減されている。

【００２５】このように、本実施例では、一対のサスティン電極２Ａを、単位発光領域毎に互いに対向して突出する突出部２ａを有し、たとえば錫を含む透明電極材料からなる透明導電膜２と、細幅の帯状のたとえばアルミニウム又はアルミニウム合金からなる金属膜（バス電極）３とで構成し、金属膜（バス電極）３によって透明導電膜２の突出部２ａを部分的に覆うことにより、金属膜（バス電極）３と透明導電膜２との界面に単位発光領域毎に独立させた抵抗を形成し、大画面化に伴う一対のサスティン電極２Ａ間での放電電流ピークを低減するようにした。

【００２６】したがって、一対のサスティン電極２Ａ間での放電電流ピークの低減によって低消費電力化が図れるばかりか、一対のサスティン電極２Ａの電圧降下が低減されるので、駆動マージンを高めることができ、輝度ムラの発生を防止することができることから、信頼性の向上が図れる。

【００２７】なお、本実施例では、サスティン電極２Ａの透明導電膜２に突出部２ａを設けた場合について説明したが、この例に限らず、たとえば図４に示すように、透明導電膜２の突出部２ａを頭部２ｅの幅より細くしたＴ字形状としてもよく、この場合には、図２に示したサ

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スティン電極２Ａより突出部２ａの面積を小さくすることができるので、放電電流を更に低減させることが可能となる。

【００２８】また、図５に示すように、サスティン電極２Ａの透明導電膜２を単位発光領域毎に独立させた構成としてもよく、この場合には、リブ９に対応するところには透明導電膜２が形成されないので、隣接セルに対する誤放電の可能性が低減される。

【００２９】

【発明の効果】以上説明したように、本発明のプラズマディスプレイパネルによれば、金属膜によって透明導電膜の突出部を部分的に覆うことにより、金属膜と透明導電膜との界面に単位発光領域毎に独立させた抵抗を形成し、行電極対間の放電電流を抑制するようにした。

【００３０】したがって、行電極対間の放電電流が抑制されることにより、低消費電力化を図ることができるばかりか、行電極対の電圧降下が低減されるので、駆動マージンが高められ、輝度ムラの発生が防止されることから、信頼性の向上を図ることができる。

【図面の簡単な説明】

【図１】本発明のプラズマディスプレイパネル（ＰＤＰ）の一実施例を示す斜視図である。

【図２】図１のサスティン電極及び金属電極の形状を示す平面図である。

【図３】図１のサスティン電極と金属電極との間に形成

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される界面抵抗による放電電流ピークの低減を、従来のものと対比して示す図である。

【図４】図２のサスティン電極及び金属電極の形状を変えた場合の他の実施例を示す平面図である。

【図５】図２のサスティン電極及び金属電極の形状を変えた場合の更に他の実施例を示す平面図である。

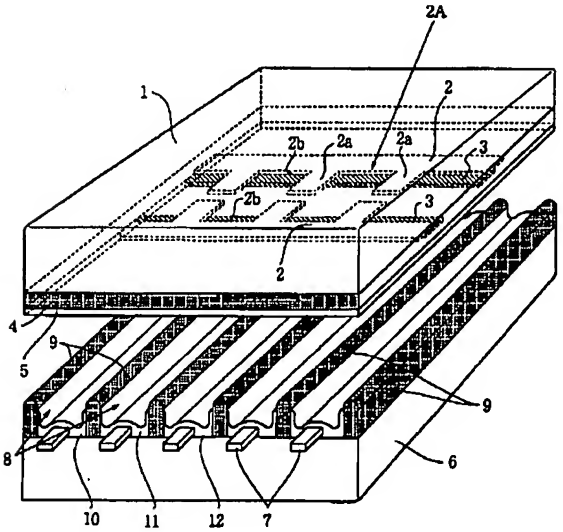
【図６】従来のプラズマディスプレイパネル（ＰＤＰ）の構成を示す斜視図である。

【図７】図６のサスティン電極及び金属電極を示す平面図である。

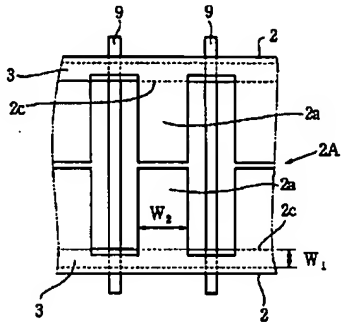
【符号の説明】

１　前面ガラス基板
２　サスティン電極
２ａ　突出部
２ｂ　内側辺部
２ｃ　基部
３　バス電極
４　誘電体層
５　ＭｇＯ膜
６　背面ガラス基板
７　アドレス電極
８　放電空間
９　隔壁（リブ）
１０，１１，１２　蛍光体層

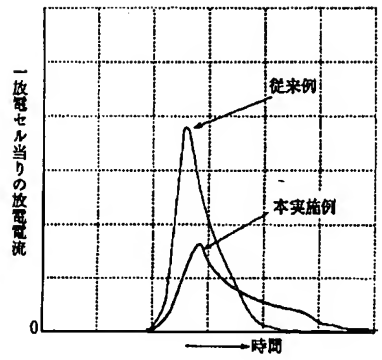
【図１】



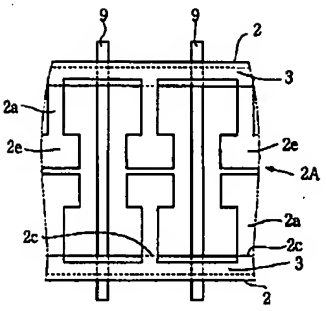

【図２】



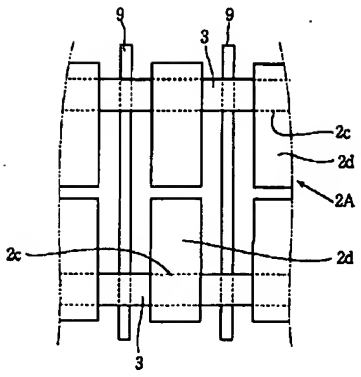
【図３】


従来例
本実施例
0
時間

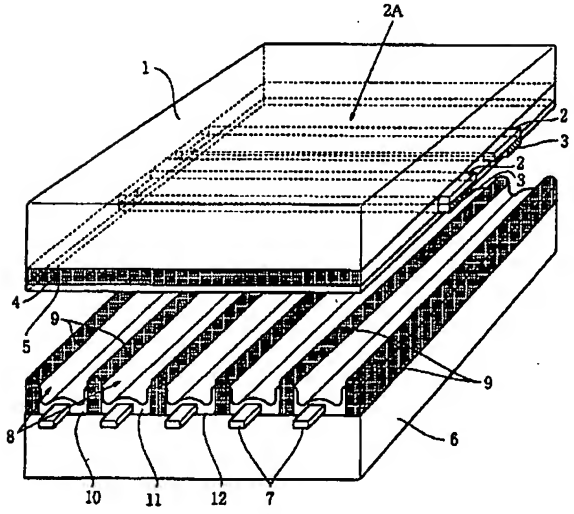
【図４】


9
9
2
3
2a
2e
2e
2A
2a
2c
2c
3
2

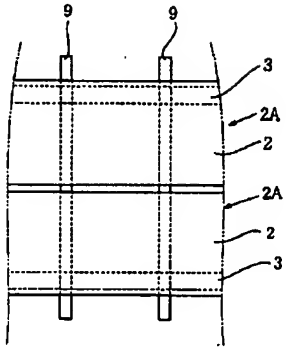
【図５】


9
9
3
2c
2d
2A
2c
2d
3

【図６】


2A
1
2
3
2
3
4
5
9
9
8
6
10
11
12
7

【図７】


9
9
3
2A
2
2A
2
3